



#### ABSTRACT OF THE DISCLOSURE

An analytical apparatus, such as a quartz crystal microbalance, comprises a piezoelectric sensor and an oscillator circuit, coupled to the sensor, to oscillate at a frequency substantially determined by a resonant frequency of the sensor, and to provide an output signal at the oscillator frequency at an output. The oscillator circuit maintains a substantially constant drive signal to the piezoelectric sensor by an AGC (33) within a feedback loop of the oscillator. The gain control signal is used as an indication of the  $Q$  of the piezoelectric sensor. The drive signal to the sensor is made substantially sinusoidal by ensuring that all the elements in the feedback loop providing signal gain and attenuation are configured to operate in a substantially linear mode.